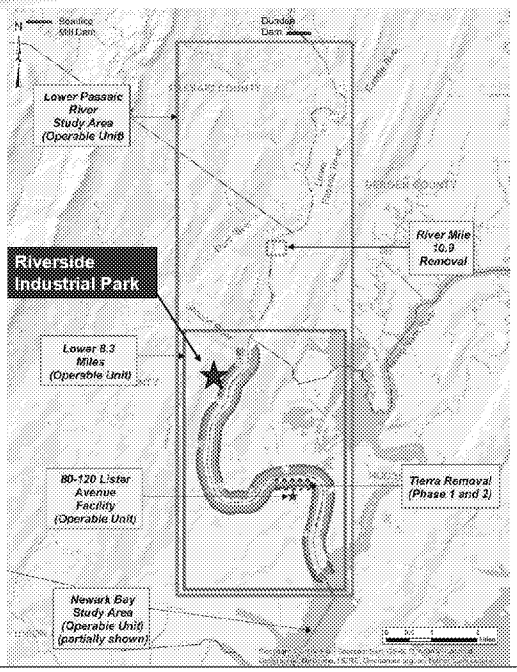
Riverside Industrial Park Superfund Site

Feasibility Study/Proposed Plan

July 9, 2020

Location and History

- Riverside Industrial Park
- Newark, Essex County
- 7.6-acre site
- Bordered by Passaic River (RM 7.1 to 7.3) and Riverside Ave/McCarter Highway
- Site reclaimed from river
- Industrial area since early 1900's



Major Milestones

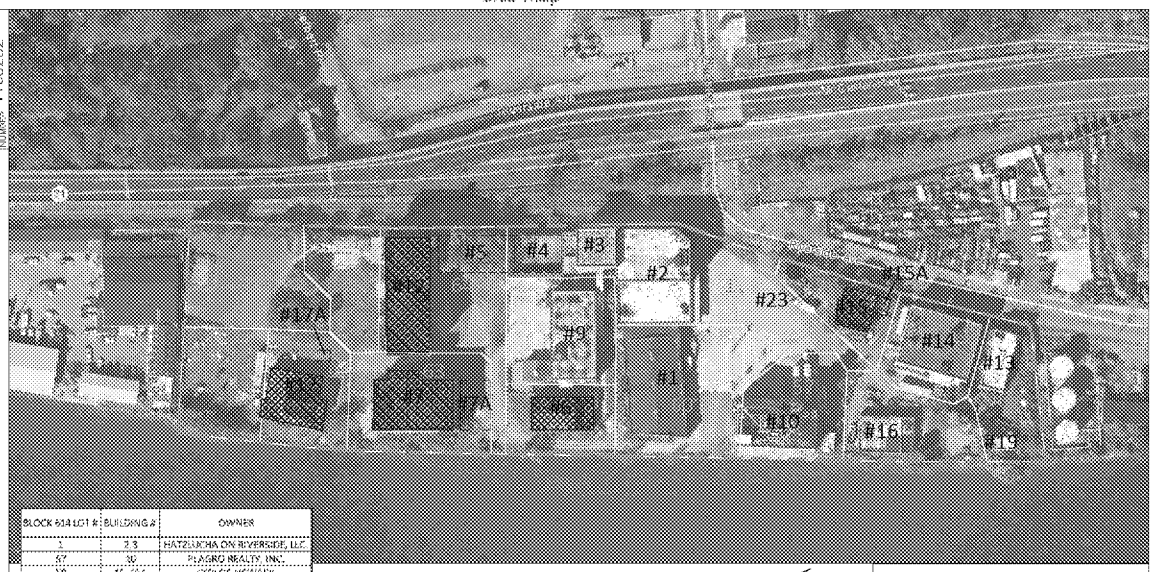
- ~1903 – PPG constructed their plant
- 1971 – PPG ceased all operations
- 1971 to current - Site was subdivided into 15 Lots and used for a wide variety of industrial purposes; some lots are currently inactive/abandoned
- 2009 – 2014 – EPA found discharge to pipe on site and conducted removal actions
- 2013 – Riverside was added to Superfund List
- 2017 – EPA approved the Remedial Investigation / Feasibility Study (RI/FS) Work Plan and field studies began
- April 2020 – Remedial Investigation (RI), Baseline Human Health Risk Assessment (BHHRA) and Screening Level Ecological Risk Assessment (SLERA) were completed
- June 2020 – Feasibility Study (FS) was conditionally approved

REMEDIAL INVESTIGATION

Summarized into five categories:

- Waste
- Sewer Water
- Soil Gas
- Soil/Fill
- Groundwater

Site Map



BLOCK #/4 LOT #	BUILDING #	OWNER
1	3,3	HATZLUCHA ON RIVERSIDE, LLC
57	30	PLAGRO REALTY, INC.
58	15, 15A	CITY OF NEWARK
59	14	ALBERT SHARPHOUSE
60	1	SHEHAR IN NEWARK, LLC
61	6	CITY OF NEWARK
62	9	CECLOR ASSOC., LLC.
63	7	CITY OF NEWARK
64	12	CITY OF NEWARK
65	NA	INDUSTRIAL DEV. CORP.
66	17	CHEMICAL COMPOUNDS, INC
67	NA	CECLOR ASSOC., LLC.
68	NA	CITY OF NEWARK
69	18, 19	SHARPMORE HOLDING INC.
70	16	ESTATE OF CAROLE GRAIFMAN

LEGEND

- FORMER BUILDING FOOTPRINT
- APPROXIMATE SITE BOUNDARY
- APPROXIMATE LOT BOUNDARY
- 61 LOT NUMBER
- #17 BUILDING NUMBER
- VACANT BUILDING

SCALE
0 120 240 FEET

REVISION	DATE	DESCRIPTION
#1	6/28/16	Add Building Numbers
#2	3/3/17	Add Former Building Footprints
#3	9/28/18	Update

FIGURE 2-1

PARCEL AND BUILDING **LOCATION** MAP

RIVERSIDE **INDUSTRIAL** PARK
SUPERFUND SITE
NEWARK, **NEW** JERSEY

DRAWING NUMBER
11602B2

DESIGN BY T.M. Florey DATE 3/24/14
CHECKED BY S.T. Bowe DATE 03/08/19
APPROVED BY S.T. Bowe DATE 03/09/14

DRAWING NUMBER 11602B2

SHT SIZE: 11x17

Waste, Sewer Water, and Soil Gas

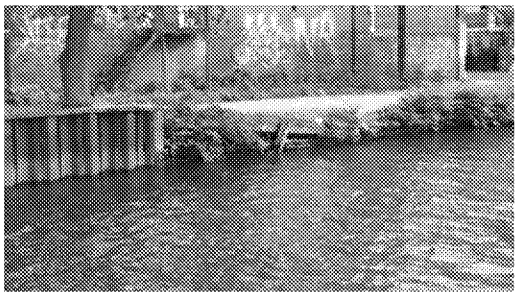
- Waste
  - Drums/containers in vacant buildings (Lots 63, 64, and 66)
  - Basement of a former pump building (Lot 58) contains petroleum waste
  - Six underground storage tanks (USTs) and contents within the USTs
    - Volatile organic compounds (VOCs), chlorinated VOCs, and petroleum waste was found in the USTs
  - Soils surrounding the USTs were found to contain petroleum waste, likely from the USTs
- Sewer Water
  - An inactive sewer manhole has elevated chlorinated organic concentrations
- Soil Gas
  - The data indicated that the vapor intrusion pathway may be a potential exposure risk
  - Indoor sampling indicated no unacceptable levels for currently occupied buildings

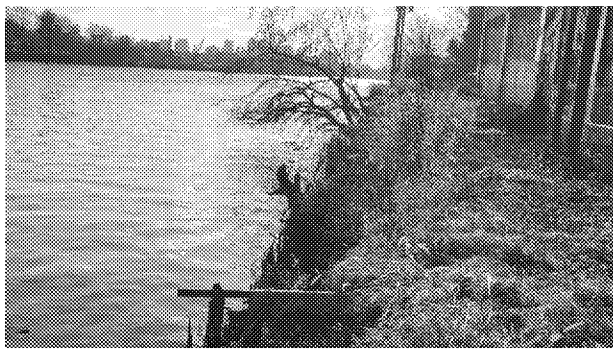
Soil/Fill

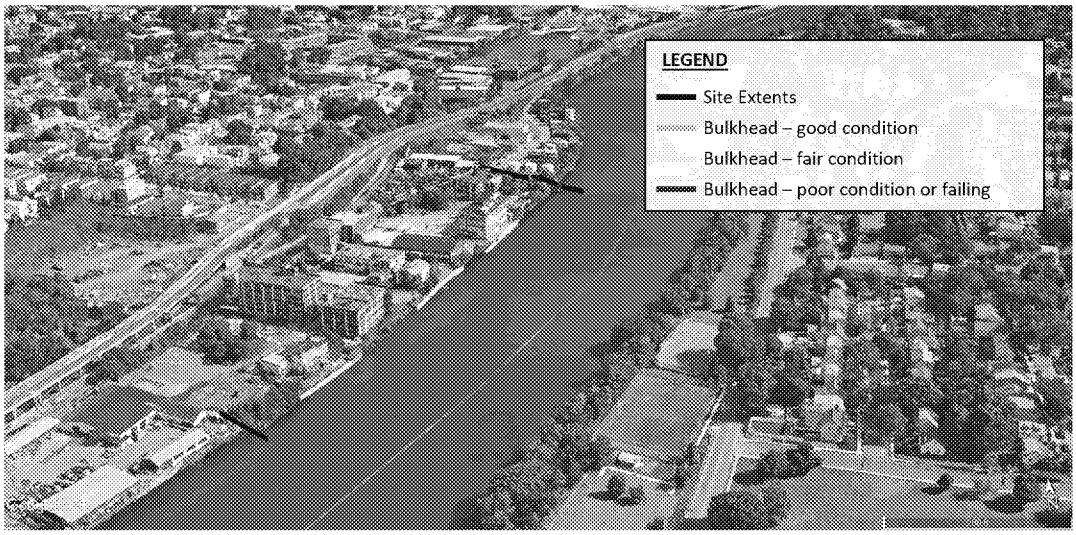
- Historic fill
  - Predominantly the top layer of the site
  - Used to raise the elevation and reclaim land from the river
  - Consists of soil with variable amounts of debris
  - Up to 15 feet of fill
  - The lower portions of the fill are saturated by groundwater
  - Fill material appears to have been impacted by historical and/or current operations
- Soil was found to be impacted by volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals
- Bulkhead deterioration and soil erosion
  - Shares boundary with the river. Concern for contaminated soils moving to and from the site during future high water events

Impacts between the site and the River

- Portions of the bulkhead have deteriorated
- There may be impacts to and from the river
- The portion of the river adjacent to the site is part of Diamond Alkali OU2, the Lower 8.3 miles. This part of the river has a cleanup plan that is under design.







Source: GSH/Tetra Tech "Preliminary Bulkhead and Shoreline Assessment Report" Revision 2, May 2019

Groundwater

- Two groundwater units were investigated:
  - A shallow and a deep aquifer
  - Both aquifers flow primarily towards the Passaic River
  - Tidal influences were observed in both units

- Groundwater quality varied based on location
  - Impacted by historic fill, underground storage tanks (USTs), spill/releases from past or current operators
  - Southern portion is contaminated by VOCs
  - Central portion contaminated by fuel-related constituents
  - Northern portion is contaminated with fuel-related constituents and VOCs

Acetone and Sewer Pipe Discharge

- Two issues were determine to be related to currently operating facilities
  - Acetone found in the groundwater below Lot 57
  - A sewer pipe draining contaminated water at river wall of Lot 57
- EPA is coordinating with NJDEP to resolve these issues
- These issues are not a component of the superfund remedy however EPA will need to concur with any NJDEP action

Baseline Human Health Risk Assessment

- Evaluated potential human health risk/hazards associated with exposure to chemical of potential concern (COPCs) in soil, groundwater, and indoor air.
- Potentially exposed populations (i.e., receptors) include:
  - Outdoor workers, indoor workers, utility workers, construction workers, trespassers (adult and adolescent), visitors (adult and child), off-site workers and residents (via wind transport), and potential future on-site residents
- Unacceptable risk from exposure to lead in soil
- Potential unacceptable future risk from lead, copper, and VOCs in soil and indoor air
- Potential unacceptable future risk in both shallow and deep groundwater

Screening Level Ecological Risk Assessment

- This is very low-quality ecological habitat
  - 100 years of industrial use and will remain industrial
  - 70% paved over
  - No sensitive species

- Unacceptable risk in surface soil
  - All remedial alternatives will address this contamination
  - No further screening is required

FEASIBILITY STUDY

Summarized into five categories:

- Waste
- Sewer Water
- Soil Gas
- Soil/Fill
- Groundwater

Remedial Action Objectives (RAO)

- **Waste**
  - Secure or remove waste
  - Prevent uncontrolled movement
  - Minimize or eliminate human and ecological exposure to the waste
- **Sewer Water**
  - Prevent exposure to chemicals of concern (COCs)
  - Minimize concentrations of COCs
  - Prevent or minimize discharge of COCs
- **Soil Gas**
  - Minimize sources of COCs in soil gas that may migrate to indoor air
- **Soil/Fill**
  - Remove COCs or minimize COC concentrations
  - Minimize or eliminate human and ecological exposure
  - Prevent or minimize offsite transport of soil containing COCs
  - Prevent or minimize leaching of COCs to groundwater and surface water
- **Groundwater**
  - Minimize contaminant concentrations and restore groundwater quality
  - Prevent exposure to COCs in groundwater
  - Prevent or minimize migration and discharge of groundwater containing COCs

Preliminary Remediation Goals (PRGs)

- Preliminary remediation goals (PRGs) are chemical-specific, quantitative goals for each medium
- No PRGs have been developed for sewer water or waste
- PRGs for soil/fill and soil gas
  - Either risk-based concentrations (RBCs) or New Jersey Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS)
  - NJDEP NRDCSRS were identified based on the reasonably anticipated use of the Site as commercial/industrial
- PRGs for groundwater
  - NJDEP promulgated groundwater quality standards (GWQSs)

Preliminary Remediation Goals (PRGs)

Table 1: Site PRGs for Soil

Soil COC	PRG (milligrams/kilogram (mg/kg))
Lead	800
Copper	526
Naphthalene (Vapor Intrusion)*	0.62
TCE	0.02
Total Xylenes	6.5
Arsenic	19
Total PCBs	1
Benzene	5
Benzo(a)anthracene	17
Benzo(a)pyrene	2
Benzo(b)fluoranthene	17
Dibenz(a,h)anthracene	2
Naphthalene (soil)*	17
Vinyl chloride	2

Table 2: Site PRGs for Groundwater

Groundwater COCs	PRG (micrograms/liter (ug/L))
Lead	5
Acetone	6,000
Benzene	1
Ethylbenzene	700
Methylene chloride	3
Tetrachloroethylene	1
Toluene	600
Trichloroethane, 1,1,2-	3
Trichloroethylene	1
Vinyl chloride	1
Xylene, m,p	1,000
Xylene, o-	1,000
Cresol, p-	50
Benzo(a)anthracene	0.1
Benzo[a]pyrene	0.1
Benzo[b]fluoranthene	0.2
Bis(2-ethylhexyl)phthalate	3
Dioxane, 1,4-	0.4
Indeno(1,2,3-cd)pyrene	0.2
Methylnapthalene, 2-	30

Nine Evaluation Criteria for Remedial Alternatives

Threshold Criteria:

1. Overall protection of human health and the environment
2. Compliance with applicable or relevant and appropriate requirements (ARARs)

Balancing Criteria:

3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume of contaminants through treatment
5. Short-term effectiveness
6. Implementability
7. Cost

Modifying Criteria:

8. State acceptance
9. Community acceptance

Remedial Alternatives

Waste

- Waste Alternative 1 – No Action
  - Required by EPA as a baseline for comparison
  - Not Protective of human health and the environment
- Waste Alternative 2 – Removal and Off-Site Disposal
  - Includes:
    - Various containers across the Site
    - NAPL in basement of building 15
    - Underground storage tanks
    - Contents in the tanks
    - Contaminated soil around the tanks
  - Protective of human health and the environment
  - Would meet all Waste RAOs

Remedial Alternatives
Sewer Water

- Sewer Water Alternative 1 – No Action
  - Required by EPA as a baseline for comparison
  - Not Protective of human health and the environment

- Sewer Water Alternative 2 – Removal and Off-Site Disposal
  - Includes sewer water and solids from an inactive sewer line
  - Sewer line will be clean and then closed in-place
  - Protective of human health and the environment
  - Would meet all Sewer Water RAOs

Remedial Alternatives
Soil Gas

- Soil Gas Alternative 1 – No Action
  - Required by EPA as a baseline for comparison
  - Not Protective of human health and the environment
- Soil Gas Alternative 2 – Institutional Controls (ICs) and Engineering Controls (ECs)
  - ICs would provide notice of restrictions upon the use of the property
  - Air monitoring would be required for all existing occupied buildings
  - If air quality was unacceptable then ECs would be required
  - Future buildings must include ECs
  - Protective of human health and the environment
  - Would meet Soil Gas RAO

Remedial Alternatives
Soil Gas

- Soil Gas Alternative 3 – ICs, ECs, and In-Situ Remediation
  - Same components as Alternative 2 except this alternative includes in-situ remediation of certain areas
  - Soils above PRGs and with 100 feet of an existing building would be remediated using chemical oxidation injection
  - Soils above PRGs and not within 100 feet would be addressed by ICs
  - Protective of human health and the environment
  - Would meet Soil Gas RAO

Remedial Alternatives
Soil/Fill

- Soil/Fill Alternative 1 – No Action
  - Required by EPA as a baseline for comparison
  - Not Protective of human health and the environment

- Soil/Fill Alternative 2 – ICs and NAPL Removal
  - Deed notices would be recorded on all 15 lots
  - Fencing would be added or enhanced for the Site
  - Soil/fill with NAPL will be excavated and disposed of off-site
  - Protective of human health and the environment
  - Would not meet most Soil/Fill RAOs – only minimizes human exposure

Remedial Alternatives
Soil/Fill

- Soil/Fill Alternative 3 – ICs, ECs (containment), and NAPL Removal
  - Same components as in Alternative 2 (deed notices, fencing, and NAPL removal) but also includes:
    - Bulkhead repair/replacement and site-wide cap
  - Protective of human health and the environment
  - Would meet all Soil/Fill RAOs

Remedial Alternatives
Soil/Fill

- Soil/Fill Alternative 4 – ICs, ECs (containment), NAPL Removal, and Focused Removal with Off-Site Disposal of Lead
  - Same components as in Alternative 2 and 3 (deed notices, fencing, NAPL removal, bulkhead and cap) but also includes:
    - Focused soil/fill removal and off-site disposal in Lots 63 and 64
    - Cluster of high level lead contamination
    - Remaining area will be capped and bulkhead will be repaired/replaced
  - Protective of human health and the environment
  - Would meet all Soil/Fill RAOs

Remedial Alternatives
Soil/Fill

- Soil/Fill Alternative 5 – ICs, ECs (containment), NAPL Removal, and In-Situ Remediation
  - Same components as in Alternative 2 and 3 (deed notices, fencing, NAPL removal, bulkhead and cap) but also includes:
    - In-Situ remediation – a stabilization/solidification technology would be likely be most applicable for this Site
    - Site-wide cap is needed to protect the in-situ remedy
  - Protective of human health and the environment
  - Would meet all Soil/Fill RAOs

Remedial Alternatives
Groundwater

- Groundwater Alternative 1 – No Action
  - Required by EPA as a baseline for comparison
  - Not Protective of human health and the environment
- Groundwater Alternative 2 – ICs, Containment at River Edge, and Pump and Treat
  - Site-wide establishment of classified exception area (CEAs) and well restriction area (WRA) to prevent potable use of groundwater
  - A vertical sheet pile barrier wall would be constructed along the river's edge
  - A 200 gallon per minute extraction and treatment system would be constructed
  - Protective of human health and the environment
  - Would meet Groundwater RAOs

Remedial Alternatives
Groundwater

- Groundwater Alternative 3 – ICs and In-Situ Remediation
  - Includes ICs as described in Alternative 2
  - In-situ remediation for organics and inorganics (chemical oxidation and/or reduction)
  - Protective of human health and the environment
  - Would meet groundwater RAOs

Remedial Alternatives
Groundwater

- Groundwater Alternative 4 – ICs, Pump and Treat, and Targeted Periodic In-Situ Remediation
  - Includes ICs and the extraction/treatment system as described in Alternative 2
  - Also includes a targeted, periodic in-situ treatment similar to Groundwater Alternative 3
  - Effectiveness would be reevaluated every year and treatment would be adjusted accordingly
  - Wells would be located along river edge for hydraulic containment
  - Protective of human health and the environment
  - Would meet groundwater RAOs

Remedial Alternatives Costs

- **Waste**

Alternatives	Net Present Worth
Waste Alternative 1	$0
Waste Alternative 2	$1,580,700

- **Sewer Waste**

Alternatives	Net Present Worth
Sewer Water Alternative 1	$0
Sewer Water Alternative 2	$24,900

- **Soil Gas**

Alternatives	Net Present Worth
Soil Gas Alternative 1	$0
Soil Gas Alternative 2	$449,800
Soil Gas Alternative 3	$4,591,968

Remedial Alternatives Costs

- **Soil/Fill**

Alternatives	Net Present Worth
Soil/Fill Alternative 1	$0
Soil/Fill Alternative 2	$356,100
Soil/Fill Alternative 3	$10,600,700
Soil/Fill Alternative 4	$12,782,900
Soil/Fill Alternative 5	$14,118,800

- **Groundwater**

Alternatives	Net Present Worth
Groundwater Alternative 1	$0
Groundwater Alternative 2	$34,258,600
Groundwater Alternative 3	$20,844,800
Groundwater Alternative 4	$24,234,400

Proposed Plan

Coming Soon

Proposed Plan Public Meeting

This will be a virtual meeting in early August

Timeline to ROD

- April 2020 - Baseline Human Health Risk Assessment, Screening Level Ecological Risk Assessment, and the Remedial Investigation Report were approved
- June 2020 - Feasibility Study conditionally approved
- July 2020 - EPA releases Proposed Plan for public comment
- September 2020 - Record of Decision (ROD) expected to be signed

Questions?

Josh Smeraldi, RPM
Smeraldi.Josh@epa.gov
212-637-4302